



**ORIGINAL RESEARCH PAPER**

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**CLINICOPATHOLOGICAL STUDY OF GLOTTIC MASSES CAUSING HOARSENESS OF VOICE**

**KEY WORDS:** GLOTTIC MASSES, HOARSENESS OF VOICE, GMC HALDWANI

**Aakanksha Rawat**

Post graduate 3rd year resident department of otorhinolaryngology and head and neck surgery, GMC Haldwani (UK).

**Vaibhav Kuchhal\***

Professor and head department of otorhinolaryngology and head and neck surgery, GMC Haldwani (UK). \*Corresponding Author

**ABSTRACT**

**Introduction:** Voice is the integral part of human life, it is the medium to communicate and express their emotions. Hoarseness is a vague term used by patient to describe a change in quality of voice ranging from harshness in voice to voice weakness. Ideally the term "HOARSENESS" refers to laryngeal dysfunction caused by abnormal vocal cord function.

Hoarseness is a common presentation in all age groups. Both genders are nearly equally affected. The causes may be benign or malignant. Benign mucosal fold disorders are common, more than 50% patients have benign mucosal disorder. Hoarseness is one of the earliest features of glottic carcinoma followed by respiratory distress. Squamous epithelial carcinoma accounts for more than 90% cases.

**Aim and objectives:** Our study aims at evaluation of histopathological and clinical presentation of glottic masses causing hoarseness of voice

**Material and Methods:** A total of 30 patients attending the outpatient department of Otorhinolaryngology & Head and Neck Surgery department of Government Medical College and STGH, Haldwani, with complaints of hoarseness for more than 3 weeks were enrolled in this study.

**Conclusion:** Hoarseness of voice was most commonly seen in 46 to 55 years of age group with male predominance. Majority of patients belong to lower socioeconomic class. Most common benign lesion was vocal fold nodule and squamous cell carcinoma was the most common malignant lesion.

**INTRODUCTION**

Voice is the integral part of human life, it is the medium to communicate and express their emotions. Hoarseness is a vague term used by patient to describe a change in quality of voice ranging from harshness in voice to voice weakness. Ideally the term "HOARSENESS" refers to laryngeal dysfunction caused by abnormal vocal cord function<sup>1</sup>. When hoarse, voice can be breathy, raspy, strained or show change in volume or pitch.

Most common cause of hoarseness is laryngitis i.e. inflammation of larynx<sup>1</sup>. It is usually a chronic symptom but can be acute in viral infection, trauma to larynx and post thyroid surgery. It can also be caused due to neurological manifestation of diseases like tuberculosis, diabetes mellitus or can be due to any chronic granulomatous disease like tuberculosis, sarcoidosis.

Hoarseness is a common presentation in all age groups. Both genders are nearly equally affected. Many conditions prevail which may aggravate this problem. The causes may be benign or malignant. Benign mucosal fold disorders are common, more than 50% patients have benign mucosal disorder.<sup>2</sup> Brodnitz reported 45% of nodules, polyps or polypoidal thickening whereas Kleinsasser<sup>3</sup> reported that more than 50% of 2618 patients had one of these benign entities. Benign mucosal fold lesion like vocal nodules, polyps, intracordal cysts, contact ulcers etc., seems to be caused primarily by vibratory trauma (vocal abuse). Malignancy in the early course of time present as hoarseness of voice which may later, if untreated, can cause serious symptoms which warrants for immediate diagnosis and management.

Hoarseness is one of the earliest features of glottic carcinoma followed by respiratory distress. Squamous epithelial carcinoma accounts for more than 90% cases.<sup>4</sup> Due to early symptoms in the patient of carcinoma glottis patient presents to the practitioner early leading to early diagnosis.

For voice to be normal it is mandatory for vocal folds to have

intact mucosa, tension, structure and movement. Any disease affecting any of these parameters can cause hoarseness. Conditions like cigarette smoking, infections, allergy and acid reflux increases the mucosa's vulnerability to vibratory trauma leading to injury and thus aggravating the symptoms<sup>5</sup>.

**Classification of voice disorders**

Currently there is no standardized nomenclature regarding voice disorder and pathological conditions of the vocal folds. The proposed classification and nomenclature, divides voice disorder into four major categories<sup>6</sup>.

**Nonorganic voice disorder (functional)**

Nonorganic voice disorders (functional) have a common finding of dysphonia associated with normal vocal fold morphology and normal vocal fold motion. It includes Muscle tension dysphonia, conversion dysphonia, psychogenic dysphonia and functional dysphonia<sup>6</sup>.

**Organic voice disorders**

Organic voice disorders involve actual pathological changes to larynx in general and to vocal fold in specific and includes - vocal nodules, polyps, cysts, Reinke's edema, granuloma, leukoplakia, carcinoma of vocal fold etc<sup>6</sup>.

**Movement disorders**

Laryngeal movement disorders involve abnormal movement of larynx and caused by abnormalities in muscle control. Common disorders within this category are unilateral vocal fold paralysis, spasmodic dysphonia etc<sup>6</sup>.

Systemic disease that affect the voice production system Often systemic diseases have adverse effects on the function of the vocal production tracts and results in a voice change e.g. Reflux laryngitis, infections of larynx, neurological diseases like Parkinson's disease<sup>7</sup>.

**MATERIALS AND METHODS**

**STUDY DESIGN:** cross sectional study

**STUDY DURATION:** January 2018 to October 2019

**STUDY POPULATION:** Subjects included in this study are 30

patients with hoarseness of voice for more than 3 weeks with glottic mass as seen in indirect or direct laryngoscopy.

**PLACE OF STUDY:** Dr. Susheela Tiwari Government Hospital, Haldwani

**INCLUSION CRITERIA:**

Patient complaining of hoarseness for more than 3 weeks showing glottic mass on indirect laryngoscopy or on direct laryngoscopy.

**EXCLUSION CRITERIA**

1. Patient refusing to give consent.
2. Patient unfit for surgery under general anaesthesia.
3. Hoarseness due to supraglottic or subglottic causes.
4. Patient complaining of hoarseness of voice for less than 3 weeks.
5. Patient presenting with hoarseness of voice due to vocal cord palsy or due to neurological deficit.

**SAMPLE SIZE:**

All the cases attended the outpatient department of Otorhinolaryngology & Head and Neck Surgery with complaints of hoarseness for more than 3 weeks during the study period which came out to be 30.

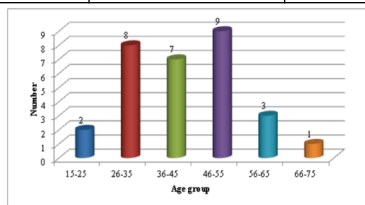
**STUDY TOOLS:**

Indirect laryngoscopy mirror  
90° rigid endoscope

**OBSERVATIONS AND RESULT**

**TABLE 1: AGEWISE DISTRIBUTION OF PATIENTS WITH HOARSENESS OF VOICE**

Agegroup	No.	Percentage
15-25	2	6.67
26-35	8	26.67
36-45	7	23.33
46-55	9	30.00
56-65	3	10.00
66-75	1	3.33



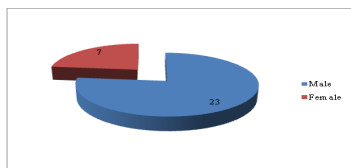
**FIGURE 1: AGEWISE DISTRIBUTION OF PATIENTS WITH HOARSENESS OF VOICE**

30 cases of hoarseness of voice were studied during study period. Maximum number i.e. 30 % cases belonged to 46-55 years of age group and minimum number i.e. 3.33% cases belonged to 66-75 years of age group. Youngest patient was 18 years old and oldest patient was 73 years of age.

**TABLE 2: SEXWISE DISTRIBUTION OF PATIENTS WITH HOARSENESS OF VOICE**

Sex	No.	Percent
Male	23	76.67
Female	7	23.33

Out of 30 cases 23 patients were males and 07 patients were females.



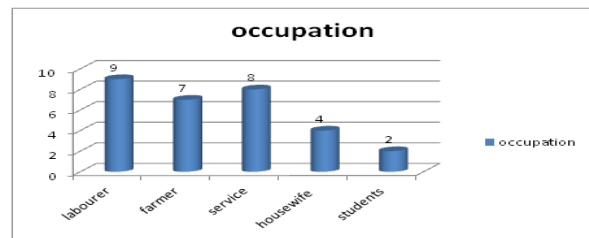
**FIGURE 2: SEXWISE DISTRIBUTION OF PATIENTS WITH HOARSENESS OF VOICE**

**TABLE 3: RESIDENCEWISE DISTRIBUTION OF PATIENTS WITH HOARSENESS OF VOICE**

Residence	No.	Percentage
Rural	15	50
Urban	15	50

**TABLE 4: OCCUPATIONWISE DISTRIBUTION OF PATIENTS WITH HOARSENESS OF VOICE**

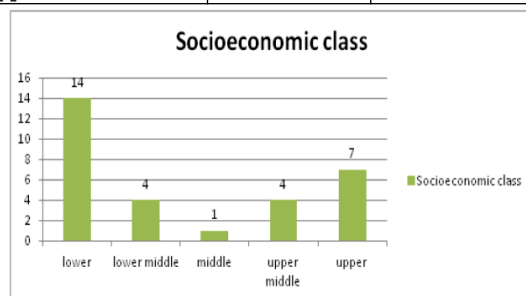
Occupation	No.	Percent
labourer	9	30
Farmer	7	23.33
Service	8	26.66
Housewife	4	13.33
Student	2	6.67



**FIGURE 3: OCCUPATIONWISE DISTRIBUTION OF PATIENTS WITH HOARSENESS OF VOICE**

**TABLE 5: SOCIO ECONOMIC STATUS**

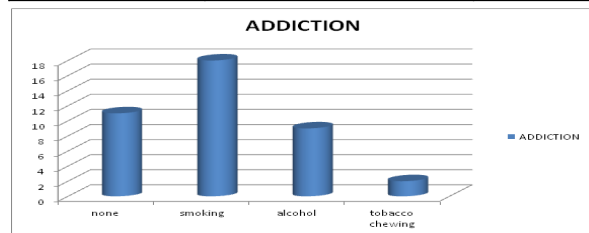
Socioeconomicstatus	No.	Percent
Lower class	14	46.67
Lower middleclass	4	13.33
Middle class	1	3.33
Upper class	4	13.33
Upper middleclass	7	23.33



**FIGURE 4: SOCIO ECONOMIC STATUS**

**TABLE 6: HOARSENESS OF VOICE IN RELATION TO ADDICTIONS**

Addictions	Total number of cases (n=30)	Percentage
No	11	36.66%
Smoking	18	60%
Alcohol	9	30%
Tobacco chewing	2	6.67%



**FIGURE 5: HOARSENESS OF VOICE IN RELATION TO ADDICTIONS**

In our study most common addiction was smoking which was present in 18 (60%) cases followed by alcohol consumption in 9 (30%) cases.

**TABLE 7: DURATION OF HOARSENESS OF VOICE**

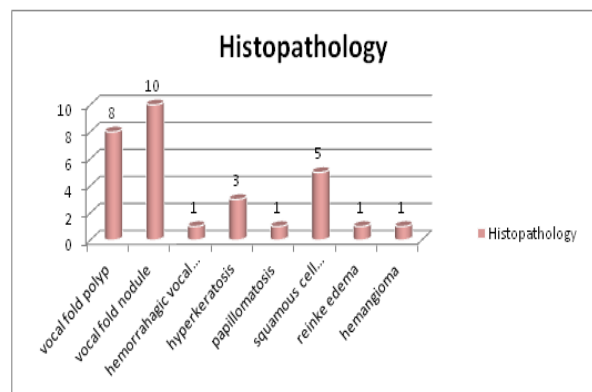
Duration of symptoms	No.	Percent
Lessthan6months	16	53.33
6-12months	8	26.66
13-18months	4	13.33
>18months	2	6.67

**TABLE 8: LATERALITY OF LESION IN PATIENTS WITH HOARSENESS OF VOICE**

Laterality	No.	Percent
Bilateral	12	40
Unilateral[L]	6	20
Unilateral[R]	12	40

**TABLE 9: HISTOPATHOLOGY OF LESION IN PATIENTS WITH HOARSENESS OF VOICE**

Histopathology	No.	Percent
Hemangioma	1	3.33
Hemorrhagicvocal fold nodule	1	3.33
Hyperkeratosis	3	10.00
Papillomatosis	1	3.33
Reinke edema	1	3.33
Squamouscellcarcinoma	5	16.67
Vocalfoldnodule	10	33.33
Vocalfoldpolyp	8	26.67



**FIGURE 6: HISTOPATHOLOGY OF LESION IN PATIENTS WITH HOARSENESS OF VOICE**

In our study most common histopathological finding was vocal fold nodule (33.33%) followed by vocal fold polyp (26.67) and squamous cell carcinoma (16.67%).

**DISCUSSION**

Hoarseness is a symptom not a disease. It is one of the commonest symptoms and is invariably earliest manifestation of a large variety of condition affecting voice apparatus. Benign lesions of larynx constitute an interesting array of lesions such as vocal nodules, vocal polyps, mucosal hemorrhage, intracordal cyst etc. Etiological factors for lesions seem to be vibratory trauma. Secondary influences such as smoking, infection, allergy, acid reflux may also increase the mucosa's vulnerability to the kind of injuries that may occur during mucosal oscillation.

In our study a total of 30 cases of hoarseness of voice were studied during study period.

**Age and Sex:**

In our study age of patients with hoarseness of voice ranged from 18 years to 73 years. Majority of patients i.e. 30% cases were in the group of 46-55 years. This observation coincide with study by **Manish Munjal**<sup>8</sup> **Hansa Banjara**<sup>9</sup> and **Chinthapeta BK**<sup>10</sup> where 41- 50 years age group was most common.

In our study we observed male preponderance with 76.67% patients' male and 23.33% patients' female, thus male to female ratio of approximately 3:1 was observed. This finding was comparable to the study done by **Hegde**<sup>11</sup> and **Sindhu**<sup>12</sup> where male to female ratio was 3:1 and 4:1 respectively.

**Residence:**

In our study we found equal number of patients from rural and urban background i.e. 50%. In a study by **Sambu Bhaita**<sup>13</sup> patients were predominantly from rural areas comprising of 83 cases (75.5%). This difference in observation can be explained by the increase level of urban migration of rural people in search of livelihood.

**Occupation:**

In our study majority of patients i.e. 30% were labourer class. In this study we included daily wage worker, street vendors and hawkers as labourer class. These results were comparable to the study done by **Sambu Baitha et al**<sup>13</sup> and **Sindhu**<sup>12</sup>. In females most common group was house wife (13.33%) followed by teachers (6.66%).

**Socio economic status:**

For determining the socioeconomic status of patients we used revised BG Prasad social classification for year 2019. In our study, majority of patients (46.67%) belonged to low socio economic status. This can be explained by the fact that majority of labourer class comes under low socioeconomic group.

**Substance Abuse:**

In our present study commonest habit noted was smoking which was seen in 60 % patients followed by alcohol (30%). **Sindhu et al**<sup>12</sup>, **Muniraju et al**<sup>14</sup> and **Zeba Ahmed et al**<sup>15</sup> in there study also concluded that smoking was the most common habit among patients with hoarseness of voice.

**Duration of hoarseness of voice:**

In our study, duration of hoarseness ranged from 3weeks up to 2 years. The maximum number of patients (53.33%) presented to us within 6 months of symptoms. Similar results were observed by **Batra et al**<sup>16</sup> where about 59% of patients had presented within 5 months of duration.

**Indirect laryngoscopic (IDL) examination:**

On indirect laryngoscopic examination (IDL) vocal cord nodule presented as whitish regular glistening masses at the junction of anterior 1/3<sup>rd</sup> & post 2/3<sup>rd</sup> of both vocal folds which was present in 33.33% patients. These results were similar to the study conducted by **Muniraju. M, Vidya H.**<sup>14</sup> In our study polyp was seen as a pinkish oedematous mass at the junction of anterior 1/3<sup>rd</sup> and posterior 2/3<sup>rd</sup> of vocal fold. Squamous cell carcinoma usually presented as ulceroproliferative growth involving either one or both vocal folds. In our study we observed 40% lesions involving bilateral vocal folds while 60% were unilateral. In laterality we found right vocal fold affected in 40% cases while left was affected in 20% cases. In studies conducted by **Manish Munjal et al**<sup>8</sup> bilateral lesions were found to be commonest (72.6%) followed by left and right, 15.2% and 12% respectively. This difference in observation can be explained by the fact that in their study they observed maximum number of cases of chronic laryngitis which usually involves bilateral vocal folds.

**Histopathology:**

Most common histopathology findings were vocal fold nodule (33.33%) followed by vocal fold polyp (26.67%) and squamous cell carcinoma (16.67%). Vocal fold nodule was found to be the most common finding in studies published by **Parik**<sup>17</sup>, **Muniraju. M, Vidya. H**<sup>14</sup>, **Munjal et al**<sup>8</sup> and **Debajyoti et al**<sup>18</sup>.

In our study vocal fold polyp was the second most common histopathological finding present in 26.67% patients in which

all lesions were found to be unilateral. In a study published by **Muniraju. M, Vidya. H**<sup>14</sup> vocal cord polyp was found to be the second commonest histological finding. In their study 15 cases had unilateral polyps while 2 cases had bilateral polyps. In study by **Swapan Ghosh**<sup>19</sup>, **Parikh**<sup>17</sup> and **Sambu Baitha**<sup>13</sup> incidence of vocal cord polyp were 23%, 15%, and 4.54% respectively.

Third most common finding in our study was squamous cell carcinoma (16.67%) which was found only in male population. All the patients were above the age group of 45 years while smoking was the habit associated with all of the patients. All 5 patients in our study presented with complaint of hoarseness of voice along with breathlessness. In a study by **Sambu Baitha**<sup>13</sup> incidence of malignancy was 14.54% with male to female ratio as 15:1. In study by **Kadambari**<sup>16</sup> and **Swapan Ghosh**<sup>19</sup> incidence of malignancy was 18% and 8% respectively. Hyperkeratosis was found in 3 patients all of whom were male with habit of smoking present. Vocal cord papilloma was found in 1 case. In study conducted by **Swapan K Ghosh**<sup>19</sup> papilloma was found in 10 cases. This discrepancy in observation can be due to the small sample size taken in our study.

**CONCLUSION**

- **AGE:** Maximum number of patients (30%) was in the age group of 46- 55 years, youngest patient was 18 years old while oldest patient was 73 years of age.
- **SEX:** Total number of male patients was 23(76.67%) whereas number of female patients was 7 (23.33%).
- **RESIDENCE:** In our study equal number of patients belonged to urban and rural area.
- **DURATION OF SYMPTOMS:** Maximum number of patients about 53.33% presented within 6 months of onset of symptoms.
- **OCCUPATION:** Hoarseness was commonly found in laborer class (30%) followed by service class (26.66%) and farmer (23.37%).
- **SOCIOECONOMIC STATUS:** Majority of the patients with hoarseness of voice in our study belongs to lower socioeconomic strata (46.67%).
- **ADDICTION:** Smoking was the most common addiction in patients presenting with hoarseness of voice i.e. 60%.
- **LATERALITY:** We observed that majority of patients presented with unilateral lesion (60%); while bilateral lesions were present in 40% patients. In unilateral lesions 40% have lesion on right side while in 20% patients' lesion was on left side.
- **HISTOPATHOLOGY:** Vocal fold nodule was the commonest cause of hoarseness of voice (33.33%) and males were commonly affected. Vocal fold polyp was next common cause for hoarseness of voice (26.67%). Malignancy (squamous cell carcinoma) was found in 16.67% of cases and all the patients were male with history of smoking. Hyperkeratosis was the etiological factor for hoarseness of voice in 10% of the patients. Hemangioma, Reinke edema, papillomatosis and hemorrhagic vocal fold nodule, each was found in 3.33% of all the patients.

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